



JC10 Rec'd PCT/PTO 21 MAR 2002

U.S. APPLICATION NO (if known, see 37 CFR 1.5) <div style="font-size: 1.5em; font-weight: bold;">10/088584</div>		INTERNATIONAL APPLICATION NO PCT/SE00/01883		ATTORNEY'S DOCKET NUMBER 1807-0160P	
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21. <input checked="" type="checkbox"/> The following fees are submitted: <b>BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)):</b> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO. .... <b>\$1,040.00</b>  International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO ..... <b>\$890.00</b>  International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO. .... <b>\$740.00</b>  International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) ..... <b>\$710.00</b>  International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4). .... <b>\$100.00</b> <b>ENTER APPROPRIATE BASIC FEE AMOUNT =</b>				<b>CALCULATIONS      PTO USE ONLY</b>	
				\$	1,040.00
Surcharge of <b>\$130.00</b> for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input checked="" type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$	130.00
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total Claims	12 - 20 =	0	X \$18.00	\$	0.00
Independent Claims	1 - 3 =	0	X \$84.00	\$	0.00
MULTIPLE DEPENDENT CLAIM(S) (if applicable) Yes			+ \$280.00	\$	280.00
<b>TOTAL OF ABOVE CALCULATIONS =</b>				\$	1,320.00
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.				\$	0.00
<b>SUBTOTAL =</b>				\$	1,320.00
Processing fee of <b>\$130.00</b> for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$	0.00
<b>TOTAL NATIONAL FEE =</b>				\$	1,320.00
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). <b>\$40.00</b> per property +				\$	0.00
<b>TOTAL FEES ENCLOSED =</b>				\$	1,320.00
				Amount to be: refunded	\$
				charged	\$

a. ☒ A check in the amount of \$ 1,320.00 to cover the above fees is enclosed.

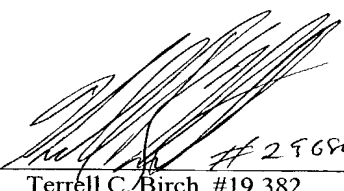
b. ☐ Please charge my Deposit Account. No. \_\_\_\_\_ in the amount of \$ \_\_\_\_\_ to cover the above fees.  
 A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any  
 overpayment to Deposit Account No. 02-2448.

**NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.**

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**Date: March 21, 2002**

By  # 29680  
 Terrell C. Birch, #19,382

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JC10 Rec'd PCT/PTO 21 MAR 2002

PATENT  
1807-0160P

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant: JOHANSSON, Arne  
Int'l. Appl. No.: PCT/SE00/01883  
Appl. No.: New Group:  
Filed: March 21, 2002 Examiner:  
For: VEHICLE EXTENSION DEVICE

PRELIMINARY AMENDMENT

**BOX PATENT APPLICATION**

Assistant Commissioner for Patents  
Washington, DC 20231

March 21, 2002

Sir:

The following Preliminary Amendments and Remarks are respectfully submitted in connection with the above-identified application.

AMENDMENTS

IN THE SPECIFICATION:

Please amend the specification as follows:

Before line 1, insert --This application is the national phase under 35 U.S.C. § 371 of PCT International Application No. PCT/SE00/01883 which has an International filing date of September 28, 2000, which designated the United States of America.--

Docket No. 1807-0160P

IN THE CLAIM:

Please amend the claims as follows:

6. (Amended) An extension device for automotive vehicles according to claim 1, characterized by a guide pin (21) with a substantially cylindrical cross-section being arranged on the rear end section (14).



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Docket No. 1807-0160P

VERSION WITH MARKINGS TO SHOW CHANGES MADE

The specification has been amended to provide a cross-reference to the previously filed International Application.

IN THE CLAIMS:

The claims have been amended as follows:

6. (Amended) An extension device for automotive vehicles according to [any one of the previous claims] claim 1, characterized by a guide pin (21) with a substantially cylindrical cross-section being arranged on the rear end section (14).

112110 PA/MAH  
2001-01-23

3/PR TS

10/088584

1 JC10 Rec'd PCT/PTO 21 MAR 2002

TITLE

## Vehicle extension device

## TECHNICAL FIELD

- 5 The present invention relates to an extension device for automotive vehicles, such as dumpers, comprising a framework with a front end section and a rear end section, said automotive vehicles including a forward vehicle section, supporting the prime mover, exhibiting a first articulation member, and a rear vehicle section exhibiting a second articulation member, said first and second articulation members being  
10 intended for connection with each other and for allowing pivoting of the vehicle sections, in relation to each other, around a longitudinal axis of the automotive vehicle.

## BACKGROUND ART

- 15 When manufacturing commercial automotive vehicles, such as dumpers, it is presently customary to offer, together with a standardised forward vehicle section, a rear, load-carrying vehicle section, the length of which is adapted to the intended area of application and to any built-on accessories, such as a crane. This is resolved by manufacturing the rear vehicle section with a large number of frame lengths.

- 20 The above approach is not cost-effective, however, as production and storage will both be expensive due to the relatively small production series. Further, modifications to the vehicle length cannot be allowed after delivery.

- 25 However, there are cases where the fixed framework of the rear vehicle section is cut off, whereupon extension beams are welded in to obtain, in this way, a vehicle of the required length.

- 30 This, however, is a complicated and time-consuming operation, a/o requiring access to special tools and special equipment. Furthermore, such a solution may require giving the construction a lower strength at the joints, compared to the rest of the construction. Besides this, a subsequent treatment in the form of corrosion protection and painting has to be performed at the joints.

From SE 505 201 a vehicle chassis is previously known, intended for subsequent building-on of equipment, divided into a forward and a rear portion, each having two longitudinal frame members, connected to each other through an intermediate portion. Said intermediate portion comprises an intermediate framework and a number of holed junction members allowing free choice between a number of hole combinations for connecting the intermediate framework, by means of bolt or rivet joints, with the forward and rear portions of the vehicle chassis. An adjustment of the total length of the vehicle chassis can thus be made, in dependence of the selected size of the accessory subsequently to be fitted.

10

Although the method for extending vehicle frames described above enables an adaptation of the vehicle length, it still has some drawbacks. When modifying the vehicle length a large number of bolts, or rivets, will primarily have to be removed and, after the length adjustment, be refitted, which is very time-consuming. Furthermore, also in this case, there is a risk of the construction having a lower strength in relation to other framework portions.

15

20

Common to the above procedures for extension of automotive vehicles after delivery is that relatively large operations have to be performed on the framework of the vehicle, constituting a problem for the vehicle user.

#### DISCLOSURE OF INVENTION

The object of the invention is to enable an extension of the dumper without having to perform major reconstruction work on the dumper.

25

The above object is achieved by means of an extension device, the characteristics of which are defined by the independent claim 1.

30

It is a further object of the invention to provide a device for extension of automotive vehicles, such as dumpers, by which a simple, quick and secure adaptation can be made of the vehicle length, by utilising the parting line provided by the first and second articulation members of the dumper and inserting therebetween an extension device according to the present invention.





#### PREFERRED EMBODIMENT

Fig. 1 illustrates a side elevational view of an articulated or frame-steered vehicle, a so-called dumper 1, having in a known manner a forward vehicle section 2, supporting the prime mover, and a rear, load-carrying vehicle section 3, connected to the forward vehicle section 2 via a vertical pivot axle 4. Between the forward vehicle section 2 and the rear vehicle section 3, an extension device 10 according to the present invention is arranged.

The forward and rear vehicle sections, 2 and 3, respectively, are also pivotally connected to each other about a not shown horizontal pivot pin, allowing the vehicle sections to pivot in relation to each other about a longitudinal axis of the vehicle.

For steering of the vehicle 1 when being driven, the forward vehicle section 2 is brought to turn about the vertical pivot axle 4 by means of a pair of not shown hydraulic cylinders, arranged one on each side of the pivot axle 4. The torque delivered by the prime mover is transferred to the front wheels 5 and to the rear wheels 6, 7, via a not shown cardan shaft.

With reference to Figs. 2 and 3, a preferred embodiment of an extension device 10 according to the present invention will now be described. In the illustrated embodiment, the extension device 10 is formed like a framework comprising two parallel girders enclosed by walls, together defining an elongated, hollow girder. The framework hereby comprises an upper supporting portion 11 and a lower supporting portion 12 extending between a forward end section 13 and a rear end section 14. Adjacent to said upper supporting portion 11, two parallel girders 8, 9 extend between said end sections 13, 14. Side portions 15, 16, 17, 18 also extend between the end sections 13, 14, providing, together with the girders 8, 9 and the upper 11 and the lower 12 supporting portions, the stiffness and strength of the construction. According to a preferred embodiment, the above-mentioned portions 11, 12, 15, 16, 17, 18 and the sections 13, 14 are comprised of steel plates welded together to define said elongated, hollow girder.

In the forward end section 13, a third articulation member in the form of a pivot sleeve 19 with a circular cross section, intended for co-operation with a horizontal

According to a preferred embodiment, the dumper 1 is provided with a drive for the rear pairs of wheels 5, 6, and the torque provided by the prime mover is then transferred via a cardan shaft 26, 27 where the cardan shaft portion 27, located inside the

5 According to a preferred embodiment of the extension device 10, a brake caliper 31 is fixedly connected to the framework of the extension device 10. Said brake caliper 31 is co-operating with a brake disc 32 arranged on the cardan shaft portion 27. When the brake caliper 31 is activated, in the known manner, the rear wheels 6, 7 are braked.

The term dumper, as used in the description and in the claims, shall mean any type of commercial automotive vehicle equipped with a forward vehicle section, supporting the prime mover, and a load- or equipment-carrying rear vehicle section, said vehicle sections being interconnected by means of a pivot joint allowing the vehicle sections to pivot, in relation to each other, about a longitudinal axis of the vehicle.

The invention will not be limited to what has been stated above, but may be varied within the scope of the appended claims. For example, the guide pin 21 could be excluded and replaced by any other type of fixation, such as a bolted or welded connection. Further, said first and second articulation members do not have to be formed like a pivot pin and a pivot sleeve, respectively, but could be formed like a turntable comprising a vertical ball bearing assembly, the rotational axis of which would be parallel with the longitudinal axis of the vehicle, one bearing race of the assembly being affixed to the forward vehicle section and the other bearing race being affixed to the rear vehicle section. In the above embodiment example, relative rotation is taking place between the vehicle sections at the connection between the forward vehicle section and the extension device, but it should be evident to the person skilled in the art that the rotation could just as well take place between the rear vehicle section and the extension device, or even at both of the above-mentioned locations. Furthermore it is advantageous to provide the extension device with a built-on accessory in the form of for example a crane.

112110 PA/MAH  
2001-01-23

## CLAIMS

1. An extension device for automotive vehicles, such as dumpers (1), comprising a framework with a front end section (13) and a rear end section (14),  
5 said automotive vehicles including a forward vehicle section (2), supporting the prime mover, exhibiting a first articulation member (25), and a rear vehicle section (3) exhibiting a second articulation member (22), said first (25) and second articulation members (22) being intended for connection with each other and for allowing pivoting of the vehicle sections (2, 3), in relation to each other, about a longitudinal  
10 axis of the automotive vehicle, characterised by at least one of said end sections (13, 14) being provided with a third articulation member (19) intended for connection with one of said first (25) or second (22) articulation members.
2. The extension device for automotive vehicles according to claim 1,  
15 characterised by said first articulation member (25) comprising a pivot pin having a circular cross section and being intended for connection with said third articulation member (19) consisting of a pivot sleeve with a circular cross section.
3. The extension device for automotive vehicles according to claim 2,  
20 characterised by said framework comprising at least two, substantially parallel girders (8, 9), extending between said end sections (13, 14).
4. An extension device for automotive vehicles according to any one of the previous claims, characterised by said framework comprising an  
25 upper supporting portion (11), a lower supporting portion (12) and side portions (15, 16, 17, 18), said portions extending between said end sections (13, 14).
5. The extension device for automotive vehicles according to claim 4,  
characterised by said upper supporting portion (11) being provided with  
30 an aperture (24), allowing access to the inside of the extension device (10).
6. An extension device for automotive vehicles according to any one of the previous claims, characterised by a guide pin (21) with a substantially cylindrical cross-section being arranged on the rear end section (14).

7. The extension device for automotive vehicles according to claim 6,  
 characterised by said guide pin (21) being provided with a bearing (28)  
 preferably a ball bearing assembly (28) for supporting a cardan shaft portion (27)  
 5 extending through the extension device (10).

8. The extension device for automotive vehicles according to claim 7,  
 characterised by a brake disc (32) being arranged on said cardan shaft  
 portion (27), said disc co-operating, for braking, with a brake caliper (31) fixedly  
 10 connected to the extension device (10).

ABSTRACT

- The present invention relates to an extension device for automotive vehicles, such as dumpers, comprising a framework with a front end section and a rear end section, said automotive vehicles including a forward vehicle section, supporting the prime mover, exhibiting a first articulation member, and a rear vehicle section exhibiting a second articulation member, said first and second articulation members being intended for connection with each other and for allowing pivoting of the vehicle sections in relation to each other, about a longitudinal axis of the automotive vehicle.
- 5    The extension of the automotive vehicle is achieved through introducing said extension device between the forward and the rear vehicle portion of the dumper.
- 10





2/3

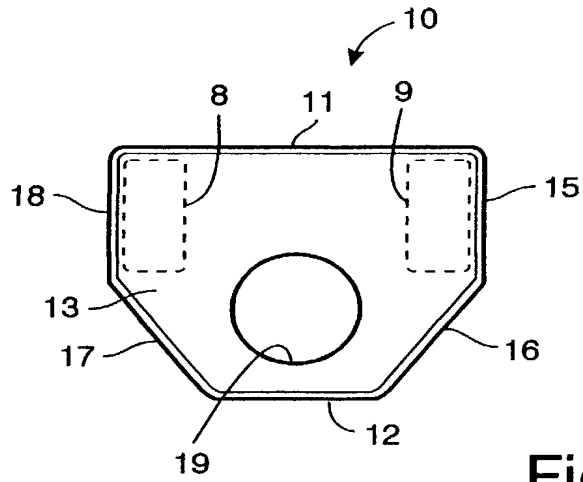


Fig.2

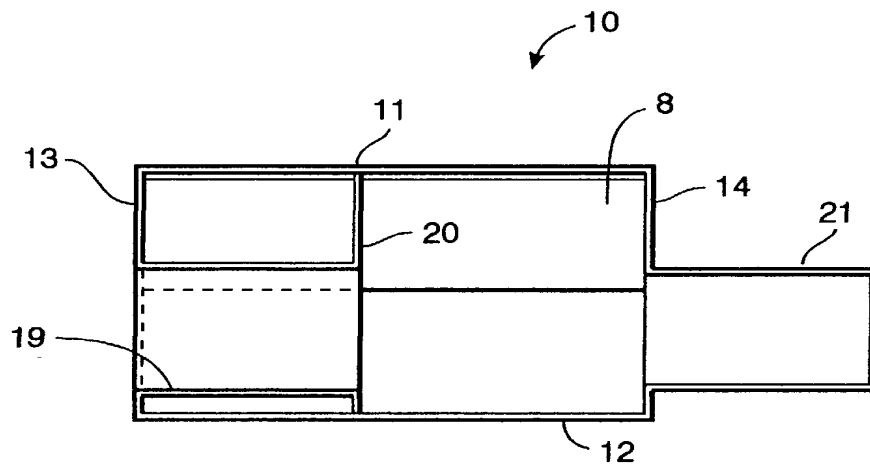
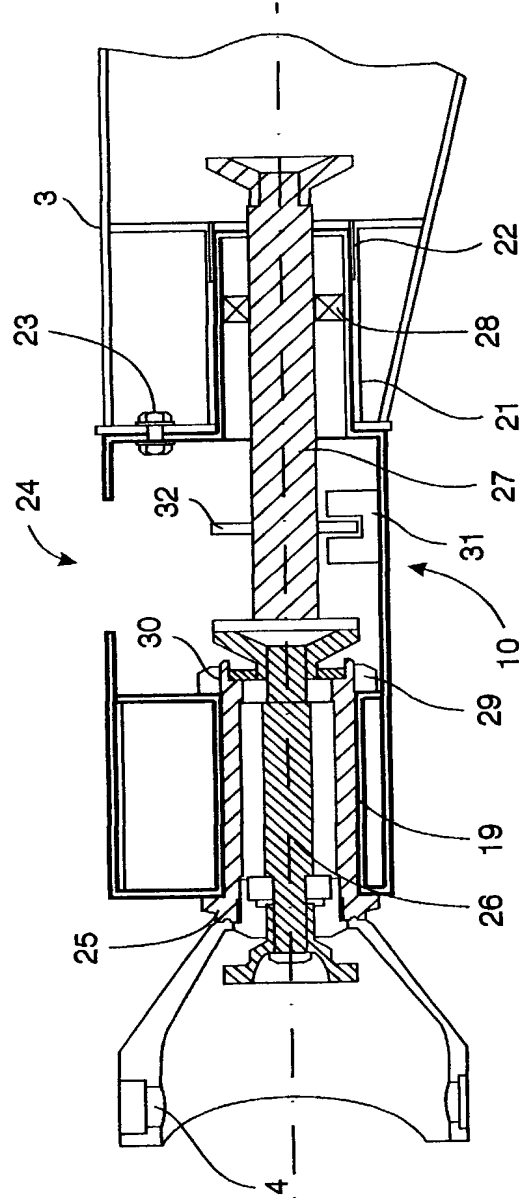


Fig.3

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Fig.4



[illegible]

ATTORNEY DOCKET NO  
1807-0160P

**Insert Title:**

VEHICLE EXTENSION DEVICE

Fill in Appropriate Information -  
For Use Without Specification Attached:

PATENT & TRADEMARK OFFICE  
MAY 21 2002

the spec

I he

the specification was filed on March 21, 2002 as  
United States Application Number \_\_\_\_\_; and /or

the specification was filed on \_\_\_\_\_ as PCT  
International Application Number \_\_\_\_\_; and was  
amended under PCT Article 19 on \_\_\_\_\_ (if applicable)

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

I do not know and do not believe the same was ever known or used in the United States of America before my or our invention thereof, or patented or described in any printed publication in any country before my or our invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months (six months for designs) prior to this application, and that no application for patent or inventor's certificate on this invention has been filed in any country foreign to the United States of America prior to this application by me or my legal representatives or assigns, except as follows.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 (a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

➡ Prior Foreign Application(s)

Priority Claimed

(Number)	(Country)	(Month/Day/Year Filed)
(Number)	(Country)	(Month/Day/Year Filed)
(Number)	(Country)	(Month/Day/Year Filed)
(Number)	(Country)	(Month/Day/Year Filed)
(Number)	(Country)	(Month/Day/Year Filed)

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed below.

➡ (Application Number) \_\_\_\_\_ (Filing Date) \_\_\_\_\_

(Application Number) \_\_\_\_\_ (Filing Date) \_\_\_\_\_

All Foreign Applications, if any, for any Patent or Inventor's Certificate Filed More Than 12 Months (6 Months for Designs) Prior To The Filing Date of This Application:

Country	Application No	Date of Filing (Month/Day/Year)
Sweden	9903568-5	10/01/1999
PCT	PCT/SE00/01883	09/28/2000

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

➡ (Application Number) (Filing Date) (Status - patented, pending, abandoned)

(Application Number)	(Filing Date)	(Status - patented, pending, abandoned)
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I hereby appoint the following attorneys to prosecute this application and/or an international application based on this application and to transact all business in the Patent and Trademark Office connected therewith and in connection with the resulting patent based on instructions received from the entity who first sent the application papers to the attorneys identified below, unless the inventor(s) or assignee provides said attorneys with a written notice to the contrary:

16 Terrell C. Birch (Reg. No. <u>19,382</u> )	Raymond C. Stewart (Reg. No. <u>21,066</u> )
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of First or Sole Inventor  
Insert Name of Inventor  
Insert Date This Document is Signed

Insert Residence  
Insert Citizenship

Insert Post Office Address

Full Name of Second Inventor, if any:

see above

Full Name of Third Inventor, if any


see above

Full Name of Fourth Inventor, if any

see above

Full Name of Fifth Inventor, if any

see above

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GIVEN NAME	FAMILY NAME	INVENTOR'S SIGNATURE	DATE*
Residence (City, State & Country)		CITIZENSHIP	
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GIVEN NAME	FAMILY NAME	INVENTOR'S SIGNATURE	DATE*
Residence (City, State & Country)		CITIZENSHIP	
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